ACOUSTIC SENSOR FOR DONWHOLE MEASUREMENT TOOL

ABSTRACT OF THE DISCLOSURE

An acoustic sensor for use in a downhole measurement tool is provided. The acoustic sensor includes a piezo-composite transducer element. In various exemplary embodiments, the acoustic sensor further includes a composite backing layer, at least one matching layer, and a barrier layer deployed at an outermost surface of the sensor. Exemplary embodiments of this invention may advantageously withstand the extreme temperatures, pressures, and mechanical shocks frequent in downhole environments and thus may exhibit improved reliability. Exemplary embodiment of this invention may further provide improved signal to noise characteristics. Methods for fabricating acoustic sensors and downhole measurement tools are also provided.